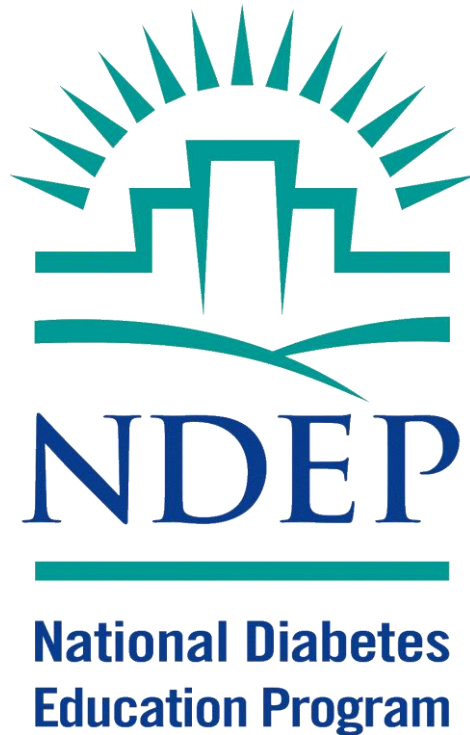


**National Diabetes Education Program  
Survey of the Public's Knowledge, Attitudes, and  
Practices Related to Diabetes: 2008**

**Executive Summary**

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## **Introduction**

The National Diabetes Education Program (NDEP) conducted its second survey of the public's knowledge, attitudes, and practices related to diabetes in August 2008. The goals of the survey were:

- To collect further information on key questions related to the NDEP campaigns and messages to use for program planning and evaluation purposes. The survey results offer insights into the public's current awareness that diabetes is serious, yet preventable and controllable, and the public's knowledge of risk factors for diabetes and of actions that would reduce the risk. In addition, the survey data allow comparisons with the public's level of awareness two years previously.
- To learn more about the current attitudes and beliefs of target audiences and their perception of their personal susceptibility to diabetes and its complications. The goal of the program is to promote and support behaviors that will help people with diabetes better manage their disease and to help people at risk make lifestyle changes that would delay or prevent type 2 diabetes.

The 2008 survey is a follow-up to a 2006 survey and supports tracking changes in:

- The public's awareness of diabetes and pre-diabetes and their personal risk factors;
- Attitudes, knowledge, and practices related to diabetes; and
- Awareness of risk for diabetes among at-risk groups.

The target sample size was 2,100 persons, ages 35 years and older. The original survey collected data on persons age 45 and older in order to obtain an adequate proportion of the NDEP's key target audiences in the sample—people with diabetes and pre-diabetes, and those who are at risk for diabetes. Because the rate of type 2 diabetes is growing fastest among those 35 to 44 years old, this age group was included in the 2008 survey.

- A person with diabetes is defined as one who answers "Yes" to the following question: "{Other than during pregnancy}, has a doctor or other health professional ever told you that you have diabetes or sugar diabetes?"
- A person with pre-diabetes is defined as one who answers "Yes" to one or more of the following: "Have you ever been told by a doctor or other health professional that you have: Pre-diabetes? Impaired fasting glucose? Impaired glucose tolerance? Borderline diabetes? Or high blood sugar?"
- A person at high risk for diabetes is defined as one who, according to his or her self-reported height and weight, has a body mass index (BMI) of 25 or greater and/or has been told by a doctor or other health professional that he or she is at high risk for diabetes and/or has ever been told by a health care provider that she had gestational diabetes or high blood sugar during pregnancy.

A stratified sampling design was used to oversample African American and Hispanic households so that reliable national estimates of those groups could be provided. The African American stratum was created using telephone exchanges where at least 50% of the households were African American; the percentages for some exchanges were higher, which increased the probability of reaching an African American household to 75% in that stratum. The Hispanic stratum was created in a similar manner. The third stratum contained all remaining telephone exchanges. Although African American and Hispanic households were oversampled, once a

household member was contacted, any eligible respondent -- regardless of his or her race or ethnicity -- was selected. The interviews were conducted by telephone using computer-assisted telephone interviewing (CATI) techniques. Interviews were conducted in English and Spanish.

The survey was conducted over a 4-month period, August through November 2008. A total of 2,078 interviews were completed, which included 411 people with diagnosed diabetes, 204 people with diagnosed pre-diabetes, 941 people at high risk for diabetes, and 522 others. The overall survey response rate was 54%. The sample was designed to provide reliable national estimates of major demographic groups: males and females; whites, African Americans, and Hispanics; and age groups 35-44, 45-64, and 65 years and older. The sample that was called was drawn from the nine major Census regions and consisted of respondents in all 50 states. The sample strategy was not designed to provide state-specific estimates. The African American and Hispanic Latino sample sizes were not large enough to provide estimates for ethnic differences within the larger groups, for instance Caribbean African Americans and African Immigrants, or Cuban/Cuban Americans, Mexicans, and Central or South Americans. In addition, the sample contained only households which had landline telephones, therefore excluding those without telephones and those with only cell phones. Further limitations may include the self-reported nature of the information obtained. Despite these limitations, the survey does provide a method for tracking evaluation outcomes and demonstrating trends and thus is of great importance in guiding the strategic plan of the NDEP and its individual workgroups.

The survey was designed to answer key questions related to NDEP campaigns and messages, including:

- Public's Knowledge of the Serious Yet Controllable Aspects of Diabetes

Is the general public aware that diabetes is a serious, yet controllable condition? Are they aware of the risk factors for diabetes? Are they aware of the complications or health problems caused by diabetes? Are they aware of the steps a person with diabetes can take to lower his or her blood sugar and that diabetes can be prevented?

- Diabetes Awareness

Is the general population aware of their diabetes status? What percentage of the population has been screened for diabetes, and what percentage report that a doctor or other health professional has told them their diabetes status, whether diagnosed with diabetes or pre-diabetes or at high risk?

- Awareness Among the Population At Risk

Are those at high risk for diabetes aware that they are at risk? Are those who know that they are at high risk for diabetes aware of the actions that they can take to reduce their risk? Have they been told by a doctor or other health care professional to take any specific steps to reduce their risk for diseases such as diabetes? Are they following that advice?

- Diabetes and Cardiovascular Disease

Are members of the public, especially people with diabetes and their families, aware of the link between diabetes and cardiovascular disease? Are they aware of their A1C, blood pressure, and cholesterol levels? Are they taking actions to control their blood pressure and cholesterol levels or to reduce their risk for cardiovascular disease in any other way?

- Awareness of NDEP Campaign and Messages

Are the general public, people with diabetes, and people at risk for diabetes aware of the NDEP and its campaign messages, specifically *Control Your Diabetes? For Life* and *Small Steps. Big Rewards. Prevent Type 2 Diabetes?*

## Survey Results

The 2008 survey results are reported for respondents 35 years of age and older. Comparisons of the 2006 and 2008 surveys are made for respondents 45 years and older.

### A. Public's Knowledge of the Serious Yet Controllable Aspects of Diabetes

*Is the general public aware that diabetes is a serious yet controllable condition? Are they aware of the risk factors for diabetes? Are they aware of the complications or health problems caused by diabetes? Are they aware of the steps a person with diabetes can take to lower his or her blood sugar and that diabetes can be prevented?*

In 2008, 85% of the population 35 years and older consider diabetes to be a very serious condition. There was no significant change in this opinion between 2006 and 2008 among persons 45 and older.

Being overweight, heredity, and not getting enough exercise are the three risk factors for diabetes that are well known by the public. The percentages of the population reporting that being overweight and not getting enough exercise are definite causes of diabetes increased between 2006 and 2008. In 2008, 96% of the population report that they feel overweight is a cause of diabetes, with 68% reporting that it is a definite cause. From 2006 to 2008, there was a significant increase in the percent of those 45 years of age and older reporting that being overweight is a definite cause of diabetes (55% vs. 68%). In 2008, 91% report that not getting enough exercise is a cause of diabetes and 51% report that it is a definite cause of diabetes. There was a significant increase among persons 45 years of age and older between 2006 and 2008 who identified not getting enough exercise as a definite cause (from 35% to 54%). Ninety-three percent (93%) report that heredity is a cause of diabetes, and 54% report that it is a definite cause of diabetes. The increase among those 45 and older from 2006 to 2008 (from 48% to 54%) was not statistically significant.

Survey respondents report that losing weight, engaging in regular physical activity, and taking medication are three steps that would definitely help a person with diabetes lower his or her blood sugar level. Eighty-four percent (84%) of the population reported that losing weight would definitely help lower one's blood sugar; 83% thought that engaging in regular physical activity would do so, while 79% cited taking medication. The percentages of the population reporting that losing weight, engaging in regular physical activity and taking medications would help lower blood sugar level increased from 2006 to 2008, but these increases were not statistically significant.

## **B. Diabetes Awareness**

*Is the general population aware of their diabetes status? What percentage of the population has been screened for diabetes and what percentage report that a doctor or other health professional told them their diabetes status, whether diagnosed with diabetes or pre-diabetes or at high risk?*

The proportions of the population 45 and older with diabetes, pre-diabetes and at high risk remained largely the same from 2006 to 2008, and about the same percentages have had blood tests for diabetes.

The majority (81%) of the population 35 years of age and older report that they have had a blood test for diabetes. People with a diagnosis of diabetes, pre-diabetes, or hypertension are more likely to have had a blood test for diabetes than others, including people at high risk for diabetes. Those who are obese or who have a family history of diabetes also are more likely to have been tested. Nine percent (9%) of the population have been told by a doctor or other health professional that they have pre-diabetes. Forty-eight percent (48%) of the population are at high risk for diabetes, but have not been told that they have pre-diabetes.

## **C. Awareness Among the Population At Risk**

*Are those at high risk for diabetes aware that they are at risk?*

When asked, “Do you feel you could be at risk for diabetes?”, only 29% of the people at high risk for diabetes report that they feel that they could be at risk for diabetes. Even among people who have been told that they have pre-diabetes, less than two-thirds (64%) report that they feel at risk for diabetes. Sixty-three percent (63%) of those who feel at risk say they do so because they have a family history of diabetes. Other reasons given include being overweight and poor dietary habits. Among those who indicate a family history of diabetes, 89% report feeling at risk. The prevalence of diabetes is greater among African Americans and Hispanics, but there were no significant differences by race in the percentages of the population who reported feeling at risk for diabetes.

Awareness of their risk for diabetes changed slightly from 2006 among persons with pre-diabetes (from 59% to 64%) but this difference was not statistically significant.

*Have they been told by a doctor or other health care professional to take any specific steps to reduce their risk for diabetes? Are they following that advice?*

Thirty-eight percent (38%) of the population 35 years and older report that a doctor or other health professional has told them to control or lose weight to reduce their risk for any disease. This represents 74% of people with diabetes, 50% of people with pre-diabetes, and 40% of people at high risk, compared with 11% of the rest of the population.

While more than 40% of those 45 and older report being told to lose weight, only 23% of those aged 35-44 report hearing the same message.

Seventy-nine percent (79%) of those who have been told to control or lose weight by a doctor or other health professional report that they are following that advice.

The percentage of persons 45 and older who were told to lose weight showed little change from 2006 to 2008, nor did the percentage of those with diabetes told to lose weight.

Forty-eight (48%) of the population 35 years or older have been told by a doctor or other health professional to increase their physical activity or exercise to reduce their risk for any disease. This represents 72% of people with diabetes, 58% of people with pre-diabetes, and 49% of people at high risk for diabetes, compared with 31% of the rest of the population. Women, those who are obese, and those with high blood pressure and high blood cholesterol were more likely than others to have been told to increase their physical activity. Seventy percent (70%) of the population who have been advised by a health professional to increase their physical activity report that they are following that advice.

Among those 45 and older, roughly the same proportion had been advised to increase their physical activity in 2006 and 2008 (52% in 2006, 49% in 2008).

#### **D. Diabetes and Cardiovascular Disease**

*Is the public, especially people with diabetes and their families aware of the link between diabetes and cardiovascular disease?*

In responses to an open-ended question that asked about the more serious health problems caused by diabetes, cardiovascular disease ranked third behind blindness (54%) and amputation (36%), with 34% identifying it as a serious health problem caused by diabetes. People with diabetes (50%) were more likely to select cardiovascular disease than were people with pre-diabetes (38%), those at high risk (32%) and all others (26%).

Among those 45 years and older, the percentage of the population who cited cardiovascular disease as a serious complication of diabetes remained roughly the same (39% in 2006, 34% in 2008). There was a significant decrease between 2006 and 2008 in the percent of the population ages 45 and older that named blindness as the most serious risk factor (64% vs. 54%). Among people with diabetes age 45 and older, there was a significant increase in awareness of kidney disease (24% in 2006 to 35% in 2008). Kidney disease, however, continues to be one of the least known serious complications of diabetes among people with or without diabetes.

*Are people with diabetes aware of their A1C levels?*

Over half (63%) of people with diabetes have heard the term “glycosylated hemoglobin” or “hemoglobin A1C.” Awareness of the term “A1C” increases with education from 38% of those with no high school diploma to 90% of college graduates. Given the definition of the term “A1C,” 71% of people with diabetes report that they have had their A1C level tested one or more times in the past year. Of those, 53% can report their last A1C level.

*To what degree do people with diabetes have high blood pressure and cholesterol levels that increase their risk for cardiovascular disease?*

Sixty-five percent (65%) of people with diabetes have been told by a health professional they have hypertension, and 57% of people with diabetes have been told that they have high blood cholesterol.

#### **E. Public's Awareness of NDEP Campaign and Messages**

*Are the general public, people with diabetes, and people at risk for diabetes aware of the National Diabetes Education Program and its campaign messages?*

Survey respondents were asked if in the past year they had heard or seen ads or educational materials with the following messages:

- Control Your Diabetes. For Life
- Be Smart About Your Heart. Control the ABCs of Diabetes
- Make the Link! Diabetes, Heart Disease, and Stroke
- Don't Be Blind to Diabetes
- Small Steps. Big Rewards. Prevent Type 2 Diabetes

The oldest NDEP campaign message—*Control Your Diabetes. For Life*—was recognized by 45% of the population and 59% of people with diabetes. The NDEP campaign *Be Smart About Your Heart. Control the ABCs of Diabetes* was recognized by 37% of the population, and 48% of people with diabetes. This campaign's messages were incorporated into the Control Your Diabetes. For Life campaign in 2007. Thirty-three percent (33%) of the population and 54% of those with diabetes report that they have heard the American Diabetes Association's (ADA) similar campaign message: *Make the Link! Diabetes, Heart Disease, and Stroke*. Thirty-four percent (34%) of the population and 51% of those with diabetes report that they have heard or seen the message associated with another ADA campaign: *Don't Be Blind to Diabetes*. The NDEP's more recent campaign message, which targets people at risk for diabetes, *Small Steps. Big Rewards. Prevent Type 2 Diabetes* was recognized by 33% of the population, 32% of people with pre-diabetes, and 45% of people with diabetes.

The percent of the population who reported that they were aware of the *Small Steps. Big Rewards. Prevent Type 2 Diabetes* campaign increased from 28% in 2006 to 33% in 2008, and among people with diabetes the increase was from 36% to 56%. Awareness of the other campaigns did not show change between 2006 and 2008.



## Conclusions

The 2006 and 2008 surveys of the National Diabetes Education Program demonstrate that the public is aware that diabetes is serious – 85 percent of respondents report that they believe diabetes is a serious disease in 2008. This result reflects a significant achievement by the diabetes community – survey results in 1997, as NDEP was founded, showed that only 8 percent of Americans believed that diabetes was serious.

Equally important, these two surveys show an increasing awareness that diabetes can be prevented or delayed. Two particular results stand out:

- The proportion of the population who report that diabetes can be prevented increased significantly between 2006 and 2008, from 64% to 71%.
- The percent of the population who have heard of the condition called pre-diabetes increased from 45% in 2006 to 51% in 2008. The increase was seen primarily in the younger group 45-64 years (46% in 2006 to 54% in 2008).

The Diabetes Prevention Program study was first reported in 2001. The term “pre-diabetes” was defined and introduced to clinicians and the public at that time. NDEP’s public outreach effort, *Small Steps. Big Rewards. Prevent type 2 Diabetes.* was launched in 2002. Broad public recognition of both concepts has advanced in a relatively short period of time.

### People Understand that Lifestyle Changes are Key

The public is increasingly aware that being overweight and not getting enough exercise are risk factors for diabetes. The percent of the population who report that being overweight and not getting enough exercise are definite causes of diabetes increased significantly between 2006 and 2008.

- In 2006 55% of the survey population reported that being overweight was a definite cause of diabetes, and this increased to 68% in 2008.
- Thirty five percent (35%) of the population in 2006 reported that not getting enough exercise was a definite cause of diabetes, and in 2008 this increased to 54%.

The 2006 and 2008 surveys show that people are being told by their doctors or health care providers to control or lose weight and to increase their physical activity.

- Forty-three percent (43%) have been told to control or lose weight, and 80% of them report that they are following that advice.
- Forty-nine percent (49%) have been told to increase their physical activity, and, of those, 70% report following that advice.
- People with diabetes, the overweight, people with hypertension and those with high blood cholesterol are more likely to report that a doctor has given them this advice. These numbers did not change between 2006 and 2008.

The majority of the population recognizes that losing weight and increasing physical activity would definitely help lower blood sugar level.

- In 2008, 84% reported that losing weight would definitely help lower blood sugar levels, an increase from 78% in 2006.

- In 2008, 83% report that engaging in regular physical activity would definitely help, up from 76% in 2006. These increases are not statistically significant.

A critical issue, however, emerged in the 2006 survey and was affirmed in 2008. People with diabetes are not confident in their understanding of their role and actions in good diabetes management. In 2008, less than 50 percent of respondents with diabetes believed they have an “excellent” understanding of the role of:

- Diet
- Low blood sugar
- Use of self-monitoring of blood glucose results
- High blood sugar
- Exercise
- Medications
- Management of complications

In response to these findings NDEP has initiated an effort to identify and share materials and tools that help people with diabetes and people at risk make the behavior changes at the core of better health outcomes. The surveys have demonstrated that people understand diabetes is serious and that they understand the role lifestyle changes, and that they report that their health care professionals are counseling them to make changes. None-the-less they lack an understanding of the role of these key steps, including acting on blood glucose testing results. NDEP emerging effort to support behavior change responds to these findings and will provide information for target audiences on “how” to make changes.

#### *People Recognize Diabetes Complications*

The 2006 and 2008 surveys also examined the public’s awareness of the serious health problems caused by diabetes. In 2008, 54% of the population 35 years and older identified blindness as a serious health problem followed by amputation (36%), and cardiovascular disease (34%).

- People with diabetes were more likely to identify the health problems associated with diabetes than were those with pre-diabetes, at high risk or all others.
- People 45 years and older with diabetes showed a significant increase in awareness of kidney disease from 24% in 2006 to 35% in 2008, but it remains to be the least known serious complication of diabetes among a list of four that included blindness, cardiovascular disease and amputation.

#### *Understanding Risk of Diabetes*

A key finding from the 2006 public survey indicated that family history was a significant contributing factor for people who felt at risk for diabetes. In 2008, family history continued to be recognized as a risk factor across all racial and ethnic groups.

In addition, both surveys reflect a disconnect between people’s perception of *what* creates risk for diabetes (overweight, etc.) and *their* personal risk for diabetes. For example, in 2006, 55% of the survey population reported that being overweight was a definite cause of diabetes and 30% of people at high risk for diabetes recognized that their weight placed them at risk. Two years later,

the awareness of being overweight as a cause of diabetes increased to 68% but recognition of being overweight as a risk factor among those at risk for diabetes remained nearly unchanged (28%). They recognize that overweight people are at risk but do not seem to see themselves as overweight.

In response to this, NDEP has refined public education messages and outreach to people at risk to encourage them to consider their family history. The survey research, supported by subsequent qualitative research, has led NDEP to messages that better engage the public and invite them to take steps to prevent or delay the onset of diabetes.

The results of this survey indicate the effect NDEP is having on the public's knowledge, attitudes, and practices related to diabetes. They provide valuable information that can be used in program planning to strengthen the NDEP campaigns and messages to support positive behavior change as the NDEP works towards preventing the onset of diabetes, promoting early diagnosis and improving the treatment and outcomes in people with diabetes.